Freeform Search

Database:
- US Pre-Grant Publication Full-Text Database
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- Derwent World Patents Index
- IBM Technical Disclosure Bulletins

Term: L26 and (replac$ or substitut$) and (compar$ or match$)

Display: 10 **Documents in Display Format:** KWIC **Starting with Number** 1

Generate: ○ Hit List ◉ Hit Count ○ Side by Side ○ Image

Search Clear Interrupt

Search History

DATE: Thursday, March 31, 2005 Printable Copy Create Case

Set Name side by side	Query	Hit Count	Set Name result set
	DB=USPT; PLUR=YES; OP=ADJ		
L28	L27 and (redirect$ or re-direct$)	0	L28
L27	L26 and (replac$ or substitut$) and (compar$ or match$)	1	L27
L26	(6640251).pn.	1	L26
L25	L24 and (replac$ or substitut$)	6	L25
L24	(6775713 or 6640251 or 6611867 or 6480748 or 5666487 or 5650994).pn.	6	L24
L23	L22 and (customer$ adj1 premise adj1 equipment$)	6	L23
L22	L21 and (protocol with layer$)	455	L22
L21	L20 and L1	917	L21
L20	L17 and L18 and L19	8276	L20
L19	(compar$ or match$)	1795622	L19
L18	(replac$ or substitut$)	1316933	L18
L17	(MAC or (cable adj1 modem$))	17451	L17
L16	(MAC or (cable adj1 modem$)) and (replac$ or substitut$) and (compar$ or match$)	8276	L16

L15	L14 and (compar$ same (substitut$ or replac$))	2	L15
L14	L13 and (cable adj1 modem$)	249	L14
L13	(CPE) or (customer adj1 premise adj1 equipment$)	5854	L13
L12	L3 and (compar$ same ((substitut$ or replac$) with MAC))	1	L12
L11	L3 and (compar$ same ((substitut$ or replac$) with MAC))	1	L11
L10	L3 and (compar$ same ((substitut$ or replac$) with MAC))	1	L10
L9	L3 and (compar$ same ((substitut$ or replac$) with MAC))	1	L9
L8	L6 and ((substitut$ or replac$) with MAC)	4	L8
L7	L6 and (redirect$ or re-direct$)	2	L7
L6	L5 and L4	47	L6
L5	(CPE) or (customer adj1 mremise adj1 equipment$)	4970	L5
L4	(cable adj1 modem$).ab.	182	L4
L3	L1 and (cable adj1 modem$)	548	L3
L2	L1 and (cable adj1 modem$).ab.	47	L2
L1	709/$.ccls.	17527	L1

END OF SEARCH HISTORY

Hit List

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 1 of 1 returned.

☐ 1. Document ID: US 6640251 B1

L27: Entry 1 of 1 File: USPT Oct 28, 2003

DOCUMENT-IDENTIFIER: US 6640251 B1
TITLE: Multicast-enabled address resolution protocol (ME-ARP)

Detailed Description Text (17):
In order to forward IP unicast traffic, an enhanced version of proxy ARP is used. The differences from the standard proxy ARP are: a) all ARP requests matching the customers IP subnet are encapsulated and forwarded to all VPN members by sending them to the VPN's IP multicast address. Note: The CPE device cannot determine, if an IP device is connected to the local physical segment or not. b) a forwarded ARP request, after decapsulation, will replace the source hardware address (MAC, Media-Access-Control or physical Address) not with the routers own interface MAC address, but by a calculated address containing the tunnel source IP address, an interface unique VPN Id (e.g. VPN instance Id) and a CPE Id (to avoid loops in case of CPE redundancy).

Detailed Description Text (18):
The result of this "multicast enhanced ARP" (ME-ARP) process is that the customers IP devices will keep all relevant information about the destination tunnel endpoint and VPN membership in their ARP table. There is no overhead involved, if compared to a real physical IP subnet.

Detailed Description Text (27):
In operation, with reference to FIGS. 3, 4, 5 and 6, end station A wants to send an IP packet to end station B on the same logical subnet but connected to different gateways. It is assumed, that the ARP tables 80 and 81 from both end stations are empty. Therefore end station A sends an ARP request 50 to the ethernet broadcast address 51. CPE A, configured with the proper VPN information, checks the source IP address 52 of the ARP request packet 50 against its UVIP interfaces configured on the physical interface. In case of a match, it encapsulates the whole, unmodified, ARP request 50 into an IPsec packet 55 including the VPN identifier 56(equals assigned IP multicast address) and forwards packet 55 to the VPN's multicast address 57 using the configured local IP tunnel-endpoint 58 as source address. CPE A also adds a local ARP entry for end station A in its ARP table 72 for that UVIP interface. (CPE A will forward the ARP request, even if end station B is connected to the same physical network).

Detailed Description Text (28):
All CPEs joining the VPN will receive this encapsulated ARP request, unpack it, and forward out the local UVIP interface with the following modification to the original ARP request 55: replace the original HW source address 59 (MAC address from end station A) with a calculated MAC address containing the tunnel end-point IP address from CPE A(=source address from the received IPsec packet) and an optional interface unique VPN Id.

Detailed Description Text (29):
This new HW source address 60 is replaced in the ethernet header as well as in the ARP packet 61.

Detailed Description Text (31):
CPE A decapsulates the ARP reply packet 67, checks the destination or target IP address 68 and replaces the destination or target MAC address 69 with the address found in its local ARP cache, and sends the constructed ARP reply 70 out to end station A on the local attached physical LAN segment. In addition, the source MAC address 71(in the Ethernet header and ARP packet) is replaced with a constructed MAC address 72 containing an optional interface locally unique VPN Id and the IP address of CPE B (where the ARP reply came from).

CLAIMS:

4. A method of sending a multicast IP packet from a first end station to multiple end stations, said first and multiple end stations being on the same logical subnet and connected to different CPEs, comprising: receiving said multicast IP packet at each CPE; encapsulating said IP multicast packet; and forwarding said encapsulated IP multicast packet to a VPN assigned multicast address wherein said IP multicast packet is received by each CPE which has been configured to said VPN, wherein at each CPE receiving said forwarded ARP request, the request is decapsulated to replace the source hardware address by a calculated address containing the tunnel source IP address, an interface unique VPN ID and a CPE ID.

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Term: L24 and (replac$ or substitut$)

Display: 10 **Documents in Display Format:** KWIC **Starting with Number** 1

Generate: ○ Hit List ◉ Hit Count ○ Side by Side ○ Image

Search Clear Interrupt

Search History

DATE: Thursday, March 31, 2005 Printable Copy Create Case

6,640,251

L23/2

Set Name side by side	Query	Hit Count	Set Name result set
DB=USPT; PLUR=YES; OP=ADJ			
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L24	(6775713 or 6640251 or 6611867 or 6480748 or 5666487 or 5650994).pn.	6	L24
L23	L22 and (customer$ adj1 premise adj1 equipment$)	6	L23
L22	L21 and (protocol with layer$)	455	L22
L21	L20 and L1	917	L21
L20	L17 and L18 and L19	8276	L20
L19	(compar$ or match$)	1795622	L19
L18	(replac$ or substitut$)	1316933	L18
L17	(MAC or (cable adj1 modem$))	17451	L17
L16	(MAC or (cable adj1 modem$)) and (replac$ or substitut$) and (compar$ or match$)	8276	L16
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L10	L3 and (compar$ same ((substitut$ or replac$) with MAC))	1	L10
L9	L3 and (compar$ same ((substitut$ or replac$) with MAC))	1	L9
L8	L6 and ((substitut$ or replac$) with MAC)	4	L8
L7	L6 and (redirect$ or re-direct$)	2	L7
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L5	(CPE) or (customer adj1 mremise adj1 equipment$)	4970	L5
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L2	L1 and (cable adj1 modem$).ab.	47	L2
L1	709/$.ccls.	17527	L1

END OF SEARCH HISTORY

Hit List

Clear | Generate Collection | Print | Fwd Refs | Bkwd Refs | Generate OACS

Search Results - Record(s) 1 through 6 of 6 returned.

☐ 1. Document ID: US 6775713 B1

L25: Entry 1 of 6 File: USPT Aug 10, 2004

DOCUMENT-IDENTIFIER: US 6775713 B1
TITLE: Application program interface for abstracting control of a cable modem

Detailed Description Text (25):
HAL 60 establishes a connection between MAC layer 50 and physical layer 70 and permits any host to operate with any cable modem, so long as the cable modem and associated software are compatible with hardware abstraction layer 60. HAL 60 is an application program interface (API), in one embodiment, that interfaces with MAC layer 50 and physical layer 70. Furthermore, HAL 60, in one embodiment is intended to separate the physical layer from a software layer. In effect, HAL 60 presents a defined interface to physical layer 70. Physical layer 70 processes the data received over the cable network such that it is compatible with HAL 60. HAL 60 is able to retrieve the information taken off the cable network by physical layer 70 and present it to the higher protocol layers. HAL 60 also functions to transfer data from MAC layer 50 to physical layer 70. In effect, HAL 60 replaces a top portion of physical layer 70 and a bottom portion of MAC layer 50.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

☐ 2. Document ID: US 6640251 B1

L25: Entry 2 of 6 File: USPT Oct 28, 2003

DOCUMENT-IDENTIFIER: US 6640251 B1
TITLE: Multicast-enabled address resolution protocol (ME-ARP)

Detailed Description Text (17):
In order to forward IP unicast traffic, an enhanced version of proxy ARP is used. The differences from the standard proxy ARP are: a) all ARP requests matching the customers IP subnet are encapsulated and forwarded to all VPN members by sending them to the VPN's IP multicast address. Note: The CPE device cannot determine, if an IP device is connected to the local physical segment or not. b) a forwarded ARP request, after decapsulation, will replace the source hardware address (MAC, Media-Access-Control or physical Address) not with the routers own interface MAC address, but by a calculated address containing the tunnel source IP address, an interface unique VPN Id (e.g. VPN instance Id) and a CPE Id (to avoid loops in case of CPE redundancy).

Detailed Description Text (28):
All CPEs joining the VPN will receive this encapsulated ARP request, unpack it, and forward out the local UVIP interface with the following modification to the original ARP request 55: replace the original HW source address 59 (MAC address from end station A) with a calculated MAC address containing the tunnel end-point IP address from CPE A(=source address from the received IPsec packet) and an optional interface unique VPN Id.

Detailed Description Text (29):
This new HW source address 60 is replaced in the ethernet header as well as in the ARP packet 61.

Detailed Description Text (31):
CPE A decapsulates the ARP reply packet 67, checks the destination or target IP address 68 and replaces the destination or target MAC address 69 with the address found in its local ARP cache, and sends the constructed ARP reply 70 out to end station A on the local attached physical LAN segment. In addition, the source MAC address 71(in the Ethernet header and ARP packet) is replaced with a constructed MAC address 72 containing an optional interface locally unique VPN Id and the IP address of CPE B (where the ARP reply came from).

CLAIMS:

4. A method of sending a multicast IP packet from a first end station to multiple end stations, said first and multiple end stations being on the same logical subnet and connected to different CPEs, comprising: receiving said multicast IP packet at each CPE; encapsulating said IP multicast packet; and forwarding said encapsulated IP multicast packet to a VPN assigned multicast address wherein said IP multicast packet is received by each CPE which has been configured to said VPN, wherein at each CPE receiving said forwarded ARP request, the request is decapsulated to replace the source hardware address by a calculated address containing the tunnel source IP address, an interface unique VPN ID and a CPE ID.

8. A method of sending an IP packet from a first station to a second end station, wherein said first and second end stations are one the same logical subnet but connected to different CPEs, the method comprising: a) sending from a first end station an ARP request with an Ethernet broadcast address; b) at a first CPE associated: with said first end station, intercepting said ARP request packet and verifying the intercepted IP address against a corresponding unnumbered virtual packet network (UV) IP interface; c) if a match is verified, encapsulating said ARP request into an IPsec packet with a VPN identifier; d) forwarding said IP sec packet to a VPN's multicast address using configured local IP tunnel-endpoint as a-source address, e) said first CPE further adding a local ARP entry for said first end station in its ARP table for said UVIP interface; f) receiving said encapsulated ARP request at each CPE connected to said VPN; g) unpacking, modifying and forwarding said ARP request out of the local UVIP interface when received at said CPE; and h) modifying said ARP request at each CPE by replacing the original HW source address with a calculated MAC address containing the tunnel endpoint IP address from said first CPE and an interface unique VPN ID thuse providing a new HW source address to replace in the Ethernet header as well as in the ARP itself.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 3. Document ID: US 6611867 B1

L25: Entry 3 of 6 File: USPT Aug 26, 2003

DOCUMENT-IDENTIFIER: US 6611867 B1
**** See image for Certificate of Correction ****
TITLE: System, method and article of manufacture for implementing a hybrid network

Detailed Description Paragraph Table (9):
Option Option Risk A B The lead-time delivery for ATM links has to be .check mark..check mark..check mark..check mark. .check mark..check mark..check mark..check mark. considered carefully (ATM access solutions are still not ready everywhere and service providers are experiencing serious delays especially in Europe). The last-mile access from the Point-of-Presence of the ATM service providers to the US sites can be a problem (US Regulation) as it might be required to use the infrastructure of a local carrier. It implicates Technological problems as well as extra costs. The Cable & Wireless ATM service has insufficient .check mark..check mark. .check mark..check mark..check mark..check mark. functionality e.g., transport of P-NNI signaling data units, inability to support control of end-to end delay to enable the desired capabilities to be meaningfully demonstrated. The detailed functionality of CISCO routers and .check mark..check mark. .check mark..check mark..check mark. WAN switches is insufficient or inconsistent preventing the end-to-end services being implemented. Overall network integration is more complex that originally anticipated leading to serious inter- working problems between customer, POP and C&W core equipment. Developments of IP switching proceed such that .check mark..check mark. carriers rapidly adopt a pure-IP infrastructure with IP based deterministic QoS mechanisms thus necessitating rapid upgrade or replacement of the MG28850 switches. Traffic capacity for the demonstration services .check mark..check mark. .check mark..check mark. grows in a rapid, unpredictable way outpacing the ability of the routers and core infrastructure to handle the demand. Network management system integration is more .check mark..check mark. .check mark..check mark..check mark. complex than originally anticipated undermining effort to produce end-to-end capabilities. In-band solutions to the provision of Network .check mark. .check mark..check mark. Management Data Communications Network cannot be found resulting in the need for a separate overlay NMS DCN. Equipment chosen is over-engineered for the .check mark..check mark. .check mark..check mark..check mark. specific applications implemented resulting in non-cost effective utilization of capital resources. Redundancy of Network Elements (e.g. Routers, .check mark..check mark. .check mark. MGX 8650) and sites interconnection links is not provided by both options, therefore the networks present single points of failures. No security features are proposed by the two .check mark. .check mark. options. Firewalls might be added when the network fabric is interconnected with third party. May be unable to secure sufficient maintenance .check mark..check mark..check mark..check mark. .check mark..check mark..check mark..check mark. resource for the network with appropriate training and support. Agreed SLAs are essential between NT market offering staff and the designated maintenance agent.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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☐ 4. Document ID: US 6480748 B1
L25: Entry 4 of 6 File: USPT Nov 12, 2002

DOCUMENT-IDENTIFIER: US 6480748 B1
TITLE: Facility management platform for a hybrid coaxial/twisted pair local loop network service architecture

Detailed Description Text (3):
According to FIG. 1A, an intelligent services director (ISD) 22 may be coupled to a telephone central office 34 via a twisted-pair wire, hybrid fiber interconnection, wireless and/or other customer connection 30, a connector block 26, and/or a main distribution frame (MDF) 28. Referring briefly to FIG. 1B, the ISD 22 is replaced by either a residential gateway 22-2 (when an interexchange carrier partners with a cable television service provider) or an integrated residential gateway 22-1 (when an interexchange carrier is integrated with the cable television service provider. FIG. 1B further shows other cable operators distribution infrastructure 70 or interexchange carrier (IXC) owned infrastructure 74 connected to a CATV headend infrastructure 68 which may include an inter-exchange carrier coaxial Cable Facilities Management Platform 32-1. Per FIG. 1B, the CATV headend 68 is in turn connected to a backhaul SONET ring 42 and to various alternative service networks including but not limited to IXC SS-7 based services 44, interspan, frame relay services 48 (to corporate intranets 62), and via frame relay 48, Internet service cloud 50 or IXC core network 60 to electronic commerce vendors 64.

Detailed Description Text (98):
The tap is comprised of a series of splitters which simply split the power into each of the individual tap sections. So as a minimum, the tap has to be redesigned such that the tap continually passes power to the house over the tap drop regardless of whether the faceplate is removed through the tap as being serviced. In this manner, the tap may include first and second circuit boards with the first circuit board providing nothing more than a power takeoff and signal takeoff of the main board. Today there exists cable with coax and twisted pair and power leads all within a single cable, some of which also include fiber. Accordingly, in one aspect of the invention, coming out of each of the taps is a specialized cable that includes not only a coaxial connection but also a power connection and/or a twisted pair connection. Commscope is a supplier of customized cable that will allow twisted pair and coax cables to coexist. The options with the tap box for cable or pedestal mounting are as follows: in a first embodiment the tap box would simply have a single printed circuit board having a plurality of connectors on the circuit board and an EMI and hermetic seal, circular seal around each of the connectors so that when the top of the tap box was placed and screwed onto the bottom of the tap box, the hermetic seal would seal each of the coaxial connectors and thus, the top could be removed from the tap box without affecting the printed circuit board disposed therein. In alternate embodiments, the coaxial cable outputs or taps could be located in the back, top or side of the tap box and thus not need to be removed when the faceplate was removed. One advantage of the IP telephony is that the telephone call circuit is not broken just because you removed and replaced the plate or a tap circuit board in a cable distribution network. The IP telephony call will often allow you to break for several seconds to several minutes without actually losing the call.

Detailed Description Text (102):
For multi-dwelling units, it is also possible to use similar concepts. In a multi-dwelling unit, a line is run either from a node or from a tap with a splitter into a multi-dwelling unit then within the multi-dwelling unit there are a plurality of taps located in a patch board in the basement for supplying each of the individual dwelling units. For example, a particular apartment may have an apartment amplifier which brings the signal in off of one tap or a node and amplifies that signal and then redistributes the signal to each of the individual apartments. In this manner, the amplifier may also include a high performance ISD/IRG for supplying PBX and other user services to each of the multi-dwelling units. The high performance ISD/IRG and integrated apartment amplifier, provides the following functionality; cable television service, high speed Internet access, telephony, data services, alarm and monitoring and all of the other services with have in the 49 previous applications. The ISD/IRG in the multi-dwelling unit also provides lifeline support and may include a battery backup. The apartment house can also be wired with the

hybrid coax/twisted pair cable such that each of the individual dwelling units gets not only cable television but also its telephony services directly from the high performance integrated ISD/IRG apartment complex amplifier. The ISD/IRG in either the tap or in the home environment, the ISD/IRG will be substantially the same as the prior ISD in the applications filed Dec. 31, 1997 with the exception that the ADSL modem/lifeline will be replaced by a new cable modem/lifeline configuration. Accordingly, the cable modem will need a bypass mechanism whereby a lifeline support can bypass the cable modem and power the critical phone devices within the home. This can be configured substantially the same way as the lifeline bypassing the ADSL modem in the prior applications.

☐ 5. Document ID: US 5666487 A

L25: Entry 5 of 6 File: USPT Sep 9, 1997

DOCUMENT-IDENTIFIER: US 5666487 A
TITLE: Network providing signals of different formats to a user by multplexing compressed broadband data with data of a different format into MPEG encoded data stream

Detailed Description Text (38):
FIG. 8 discloses a digital entertainment terminal (DET) 202 in accordance with a preferred embodiment of the present invention. As mentioned previously, network interface module 201 may take the form of a plug in module. In one embodiment, NIM 201 would be similar to a daughter board or option card which can be plugged into a back plane of a personal computer (PC). In such an embodiment, typically a technician could replace the module in either the field or the shop, to modify a DET to connect to and communicate over a different network, and the technician would modify associated communications control software in the system memory. Alternative implementations may use a user replaceable cartridge type network interface module, similar to a video game cartridge, which may include memory in the module for storage of the communications control. As a further alternative, the network interface module could include a digital signal processor controlled by the CPU of the DET and input/output connections compatible with all of the digital broadband networks currently available. The downloaded operating system software stored in the system memory of the DET would control operations of the digital signal processor to send and receive signals in accord with the particular network the subscriber chooses to connect the DET to.

Detailed Description Text (45):
The graphics overlay controller 833 and the video RAM 835 actually cooperate to manipulate five different planes of video information, four of which can be active at any one time, to produce the composite video frame output signals. The individual planes comprise the decoded MPEG video frames, a cursor, two graphics/text image planes manipulated by the microprocessor 810 and a backdrop plane. The backdrop plane would be switched in to replace the plane representing the decoded MPEG video frames, e.g. to present a blue background instead of the MPEG video background.

Detailed Description Text (46):
When there are no graphics or text, the composite frames would correspond entirely to the uncompressed received video frames output by the MPEG video decoder 829. When no received video frames are to be output, either when none are received or

when they are to be entirely replaced, the information from the graphics overlay generator 833 would specify a background and the active planes of text or graphic information. When received video frames are combined with text and/or graphics, the composite video frames include the uncompressed received video frames with selected pixels thereof replaced with graphics or textual data display pixels specified by the graphics overly controller 833. In this last situation, the graphics overlay controller would deactivate the backdrop plane.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 6. Document ID: US 5650994 A

L25: Entry 6 of 6 File: USPT Jul 22, 1997

DOCUMENT-IDENTIFIER: US 5650994 A
TITLE: Operation support system for service creation and network provisioning for video dial tone networks

Detailed Description Text (24):
The service creation function also includes monitoring network assets. Such monitoring includes comparing existing equipment and facilities to existing and projected service demands to determine if additional capital equipment is necessary. The monitoring of network assets may be affected by, for example, increased usage in specific serving areas, seasonal variations in usage (e.g., increased use in winter), or replacing obsolete equipment.

Detailed Description Text (55):
The PVC Controller 248 and the access subnetwork controller (ASNC) 240 also are computers having the appropriate network interfaces and software programming. The ACC 4000 is a computer system programmed to administer encryption keys and NIM network addresses in the hybrid-fiber-coax type access subnetwork. Computers similar to the ACC 4000 are used today in CATV headend systems, but those computers also run software relating to other CATV operations, e.g. billing. In technologies such as fiber-to-the-curb or fiber-to-the-home, the ACC 4000 may be replaced with a Video Access Manager (VAM).

Detailed Description Text (57):
The broadcast consolidation section 100 serves as the broadcast head-end and network POI for broadcast VIPs 114 and 116. The broadcast consolidation section 100 is adapted to receive broadcast video data in any format that may be convenient for the VIP. Specifically, the broadcast consolidation section 100 includes a digital encoder 118 to convert baseband analog video signals, for example from VIP 116, into a digitally-compressed DS-3 signal stream. Alternatively, the digital encoder 118 could be replaced with an MPEG-2 encoder to provide compressed MPEG-2 packets at a DS-3 rate.

Detailed Description Text (77):
Each LVAN 112 receives the consolidated broadcast data from the corresponding VNH 104. The LVAN 112 combines the received RF signals from the VNH 104 with any data transmitted by the ATM backbone subnetwork 106 addressed to a subscriber served by the LVAN 112. The resulting RF signal is transmitted via a local loop distribution network 124 to a number of customer premises 126 (only one shown for convenience). As discussed below with reference to FIG. 6, the local loop distribution 124 is preferably arranged as a hybrid fiber-coax distribution system, although an ADSL system or a fiber-to-the-curb system may be substituted.

Detailed Description Text (235):
Referring to FIG. 9B, step 1 shows that a VIU will request activation of digital broadcast services by calling a VIP or a VIP agent. In step 2, the VIP negotiates the service request to establish details of the subscriber's account, including the steps of: verifying the customer VDT status using the LUDB information previously supplied by the OSS; determining the drop status, e.g., whether the customer's living unit has an existing coax drop and NID 214 as shown in FIG. 6; and determining if the customer requires a DET or additional DETs. In addition, the VIP negotiates with the VIU for authorization to use or replace existing inside wire for the customer premises. The VIP will also negotiate installation due dates, and preauthorize VIU for the selected services, for example pay per view purchases.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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Term	Documents
REPLAC$	0
REPLAC	19
REPLACA	1
REPLACABILITY	79
REPLACABLE	1257
REPLACABLEY	1
REPLACABLE-FLAG	1
REPLACABLY	191
REPLACAED	4
REPLACARDING	2
REPLACATED	2
(L24 AND (REPLAC$ OR SUBSTITUT$)).USPT.	6

There are more results than shown above. Click here to view the entire set.

Display Format: KWIC Change Format

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41. A computer program product as in claim 37, wherein the function comprises a CmHalSetInfoHandler function that permits the media access controller to write one or more cable modem hardware registers, and wherein the one or more parameters comprise an Oid parameter that specifies a hardware object to set, a Param parameter that identifies a specific instance of the hardware object if multiple instances could exist in hardware, an InfoBuffer parameter that specifies information to be written, and an InfoBufferLen parameter that specifies a length of the InfoBuffer paramter.

42. A computer program product as in claim 37, wherein the function comprises a CmHalQueryInfoHandler function that allows the media access controller to query information from the cable modem, and wherein the one or more parameters comprise an Oid parameter that specifies a hardware object to query, a Param parameter that identifies a specific instance of the hardware object if multiple instances could exist in hardware, an InfoBuffer parameter that specifies a location to write a result of the query, and an InfoBufferLen parameter that specifies a length of information written to the InfoBuffer.

43. A computer program product as in claim 37, wherein the function comprises a CmHalSetModeHandler function that permits the media access controller to write one or more cable modem hardware registers and to set a mode of operation for the cable modem, and wherein the one or more parameters comprise a Mode parameter that specifies the mode of operation for the cable modem that needs to be set, a Param parameter that identifies a specific instance of the hardware object if multiple instances could exist in hardware, and a Flag parameter that specifies whether the mode of operation for the cable modem should be turned on or turned off.

44. A computer program product as in claim 37, wherein the function comprises a CmHalQueryModeHandler function that allows the media access controller to query the cable modem for the cable modem's mode of operation, and wherein the one or more parameters comprise a Mode parameter that specifies the mode of operation for the cable modem to be queried, a Param parameter that identifies a specific instance of the hardware object if multiple instances could exist in hardware, and a Flag parameter that that indicates whether the mode of operation for the cable modem is currently turned on or turned off.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw De

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☐ 2. Document ID: US 6640251 B1

L23: Entry 2 of 6 File: USPT Oct 28, 2003

DOCUMENT-IDENTIFIER: US 6640251 B1
TITLE: Multicast-enabled address resolution protocol (ME-ARP)

Abstract Text (1):
A Multicast-Enabled Address Resolution Protocol (ME-ARP) is disclosed. This ME-ARP allows the building of independent IP based Virtual Private LAN segments (VPLS) over a multicast enabled IP backbone using stateless tunnels and optimal VPLS traffic forwarding. Each VPLS has an associated IP subnet which is completely independent from other VPLS or the underlying IP backbone itself. Each Customer Premises Equipment (CPE) device needs only to be configured with a VPLS identifier

and its serving IP subnet per VPLS designated interface.

Brief Summary Text (4):
The popularity of the Internet is driving requirements for secure and segregated IP interconnection of remote sites. One solution is to use the underlying network supporting virtual connections i.e. Frame Relay or ATM. These virtual connections can be separated by provisioning to form a Virtual Private Network which is Layer 3 protocol transparent. However if the underlying network is IP itself, as is the case with the Internet then IP tunnels can be used to interconnect two or more sites. Any other known layer 2 VPN (Virtual Private Network) solution used in the prior art requires a centralized server where all CPE (Customer Premises Equipment) and IP devices have to be statically or dynamically registered, like LANE (Local-Area-Network Emulation), NHRP (Next-Hop-Routing-Protocol) or Classical IP.

Brief Summary Text (8):
Another aspect of the present invention is to provide a Multicast-Enabled Address Resolution Protocol (ME-ARP). This invention allows the building of independent IP based Virtual Private LAN segments (VPLS) over a multicast enabled IP backbone using stateless tunnels and optimal VPLS traffic forwarding. Each VPLS has an associated IP subnet which is independent from other VPLS or the underlying IP backbone itself. Each Customer Premises Equipment (CPE) device needs only to be configured with a VPLS identifier and its serving IP subnet per VPLS designated interface. In addition, each end station connected to a Physical LAN Segment (PLS) does not need to be modified in order to be a member of the VPLS. No other configuration parameters e.g. list of CPE devices, their logical or physical locations nor their IP addresses are required. The unique invention is ME-ARP (Multicast Enabled Address Resolution Protocol) including the creation of constructed lower layer address based on VPN (Virtual Private Network) Id and tunnel endpoint. Advantages provided by the method of the present invention include: a) separation of customer IP address space from either the service provider or another customer determined by policy not to be in the same virtual private network (VPN); b) capability for a remote site to belong to one or more VPN as long as the VPN policy allows. To provide support for IPv4 based applications at this point; c) transparent or Routed VPN's (by use of external routers) can be constructed independently or combined with this architecture; d) due to the use of an underlying IP multicast network to forward VPN broadcast traffic in this solution there is no need to provide address or broadcast servers; and e) VPN traffic forwarding is achieved via stateless and optionally secured tunnels which are optimally routed using the underlying IP network backbone routing architecture.

Detailed Description Text (2):
In order to facilitate the description of the invention, the following abbreviations have been used. The terminology used in this document is based on the definitions proposed by the Internet Engineers Task Force (IETF). CBT Core Based Tree Multicast Routing Protocol CPE Customer Premises Equipment DVMRP Distance Vector Multicasting Routing Protocol GRE Generic Routing Encapsulation IGMP Internet Group Management Protocol LAN Local Area Network MOSPF Multicast extensions for Open Shortest Path First PA Provider Address PIM Protocol Independent Multicast PLS Physical LAN Segment VPN Virtual Private Network VPLS Virtual Private LAN UVIP Unnumbered VPN Internet Protocol

Detailed Description Text (4):
The term "Customer Premises Equipment" (CPE) defines an edge device (e.g., router, etc.), fully managed by the provider, connecting a customers PLS to its VPN.

Detailed Description Text (14):
Stateless tunnels or links are used in CPE (Customer Premises Equipment) between connected sites. The remote tunnel endpoint address information is directly mapped into the link layer address. ME-ARP is used for IP address resolution inside a

VPLS. As a result, VPN connected IP devices will keep all relevant information about the destination tunnel endpoint and VPN membership in their own address resolution (ARP) table. Special unnumbered IP LAN interfaces will generate the link layer address based on a configured VPN identifier and dynamically learned tunnel endpoints (via ME-ARP).

Detailed Description Text (17):
In order to forward IP unicast traffic, an enhanced version of proxy ARP is used. The differences from the standard proxy ARP are: a) all ARP requests matching the customers IP subnet are encapsulated and forwarded to all VPN members by sending them to the VPN's IP multicast address. Note: The CPE device cannot determine, if an IP device is connected to the local physical segment or not. b) a forwarded ARP request, after decapsulation, will replace the source hardware address (MAC, Media-Access-Control or physical Address) not with the routers own interface MAC address, but by a calculated address containing the tunnel source IP address, an interface unique VPN Id (e.g. VPN instance Id) and a CPE Id (to avoid loops in case of CPE redundancy).

Detailed Description Text (18):
The result of this "multicast enhanced ARP" (ME-ARP) process is that the customers IP devices will keep all relevant information about the destination tunnel endpoint and VPN membership in their ARP table. There is no overhead involved, if compared to a real physical IP subnet.

Detailed Description Text (22):
Based on the VPLS membership using IP multicast, there is no need for a central VPN membership database or protocol to distribute this information. It is enough to configure a new VPN member (physical segment) in the connecting CPE device. The following minimal information is configured per UVIP (Unnumbered VPN IP) interface: a) VPN IP multicast Id; b) IP Network/Mask. Assigned by the customer from the Client Address (CA) space. This information is used to determine the correct VPN, based on either source or destination IP address. This is important to support multi-netting on the same physical interface with many VPNs; c) Tunnel IP address. This address from the Provider Address (PA) space is used to forward VPN traffic over the IP backbone to the correct tunnel end-point (bound to a VPN interface). The VPN identifier in each encapsulated packet can be used to identify the correct logical UVIP interface inside the CPE device; d) MAC calculation algorithm. This optional, but recommended, configuration parameter allows the support of different MAC address calculation to prevent possible duplicates.

Detailed Description Text (27):
In operation, with reference to FIGS. 3, 4, 5 and 6, end station A wants to send an IP packet to end station B on the same logical subnet but connected to different gateways. It is assumed, that the ARP tables 80 and 81 from both end stations are empty. Therefore end station A sends an ARP request 50 to the ethernet broadcast address 51. CPE A, configured with the proper VPN information, checks the source IP address 52 of the ARP request packet 50 against its UVIP interfaces configured on the physical interface. In case of a match, it encapsulates the whole, unmodified, ARP request 50 into an IPsec packet 55 including the VPN identifier 56(equals assigned IP multicast address) and forwards packet 55 to the VPN's multicast address 57 using the configured local IP tunnel-endpoint 58 as source address. CPE A also adds a local ARP entry for end station A in its ARP table 72 for that UVIP interface. (CPE A will forward the ARP request, even if end station B is connected to the same physical network).

Detailed Description Text (28):
All CPEs joining the VPN will receive this encapsulated ARP request, unpack it, and forward out the local UVIP interface with the following modification to the original ARP request 55: replace the original HW source address 59 (MAC address from end station A) with a calculated MAC address containing the tunnel end-point

IP address from CPE A(=source address from the received IPsec packet) and an optional interface unique VPN Id.

Detailed Description Text (29):
This new HW source address 60 is replaced in the ethernet header as well as in the ARP packet 61.

Detailed Description Text (30):
CPE B might add an entry to its ARP table 83 for caching. End station B receives the ARP request 62 and respond to it with a normal ARP reply containing its physical HW MAC address 64 as source in the ethernet header and in the ARP reply packet 65. An ARP entry for end station A with the source MAC address from the ARP request is added on end station B. The ARP table 81 of end station B now contains an entry for end station A with a constructed MAC address containing the tunnel-endpoint IP address and VPN Id. CPE B, configured to listen for constructed MAC addresses, identifies the ARP reply 63 from end station B by checking the source MAC address 64 as well as the source IP address 66 (part of VPN's IP network), encapsulate and forwards the ARP reply 67 directly to the addressed tunnel endpoint (extract tunnel endpoint IP address from destination MAC address).

Detailed Description Text (31):
CPE A decapsulates the ARP reply packet 67, checks the destination or target IP address 68 and replaces the destination or target MAC address 69 with the address found in its local ARP cache, and sends the constructed ARP reply 70 out to end station A on the local attached physical LAN segment. In addition, the source MAC address 71(in the Ethernet header and ARP packet) is replaced with a constructed MAC address 72 containing an optional interface locally unique VPN Id and the IP address of CPE B (where the ARP reply came from).

Detailed Description Text (33):
Finally, end station A receives the ARP reply packet 70 and builds an entry in its ARP table 80 with an entry for end station B and the MAC address containing the remote tunnel endpoint IP address and VPN Id.

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Current US Cross Reference Classification (3):
709/245

CLAIMS:

4. A method of sending a multicast IP packet from a first end station to multiple end stations, said first and multiple end stations being on the same logical subnet and connected to different CPEs, comprising: receiving said multicast IP packet at each CPE; encapsulating said IP multicast packet; and forwarding said encapsulated IP multicast packet to a VPN assigned multicast address wherein said IP multicast packet is received by each CPE which has been configured to said VPN, wherein at each CPE receiving said forwarded ARP request, the request is decapsulated to replace the source hardware address by a calculated address containing the tunnel source IP address, an interface unique VPN ID and a CPE ID.

8. A method of sending an IP packet from a first station to a second end station, wherein said first and second end stations are one the same logical subnet but

connected to different CPEs, the method comprising: a) sending from a first end station an ARP request with an Ethernet broadcast address; b) at a first CPE associated: with said first end station, intercepting said ARP request packet and verifying the intercepted IP address against a corresponding unnumbered virtual packet network (UV) IP interface; c) if a match is verified, encapsulating said ARP request into an IPsec packet with a VPN identifier; d) forwarding said IP sec packet to a VPN's multicast address using configured local IP tunnel-endpoint as a-source address, e) said first CPE further adding a local ARP entry for said first end station in its ARP table for said UVIP interface; f) receiving said encapsulated ARP request at each CPE connected to said VPN; g) unpacking, modifying and forwarding said ARP request out of the local UVIP interface when received at said CPE; and h) modifying said ARP request at each CPE by replacing the original HW source address with a calculated MAC address containing the tunnel endpoint IP address from said first CPE and an interface unique VPN ID thus providing a new HW source address to replace in the Ethernet header as well as in the ARP itself.

Full | Title | Citation | Front | Review | Classification | Date | Reference | Sequences | Attachments | Claims | KWIC | Draw. De

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L23: Entry 3 of 6 File: USPT Aug 26, 2003

DOCUMENT-IDENTIFIER: US 6611867 B1
**** See image for Certificate of Correction ****
TITLE: System, method and article of manufacture for implementing a hybrid network

Drawing Description Text (92):
FIG. 72 is a table containing an alternative solution evaluation matrix used to evaluate the pro's and con's of various alternatives at a high level by assigning comparative ratings to each area;

Detailed Description Text (29):
For a communication session to proceed between the parties to a connection, it is essential that data be presented in a form that can be recognized and manipulated. The sequence of required tasks at each end, such as the format of the data delivered to a party, the rate of delivery of the data, and resequencing of packets received out of order, is generally handled in an organized manner using layered communication architectures. Such architectures address the two portions of the communications problem, one being that the delivery of data by an end user to the communication network should be such that the data arriving at the destination is correct and timely, and the other being that the delivered data must be recognizable and in proper form for use. These two portions are handled by protocols, or standard conventions for communication intelligently, the first by network protocols and the second by higher level protocols. Each of these protocols has a series of layers. Examples of layered architectures include the Systems Network Architecture (SNA) developed by IBM, and the subsequently developed Open Systems Interconnection (OSI) reference model. The latter has seven layers, three of which are network services oriented including physical, data link, and network layers, and the other four providing services to the end user by means of transport, session, presentation, and application layers, from lowest to highest layer.

Detailed Description Text (31):
X.25 is employed for virtual circuit (VC) connections, including the call setup, data transfer, and call clearing phases. Call setup between DTEs connected to the